12-2-1994

Iron in Laundry Water

Cooperative Extension Service
South Dakota State University

SOLVING LAUNDRY PROBLEMS

FS 901-B

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SOLVING LAUNDRY PROBLEMS / IRON IN LAUNDRY WATER

High concentrations of iron in the water supply create staining during laundry. This is a widespread problem throughout much of South Dakota.

Iron can get into water in two major ways:

- Iron may be dissolved and picked up by groundwater as it seeps naturally through soil and rock. This groundwater is then used for the home water supply.
- Iron deposits can build up inside pressure tanks, water heaters, and water pipes, occasionally breaking loose and causing rusty water.

Prevention of problems caused by the presence of iron is generally easier than attempts to cope with staining problems after they happen.

Classification of Iron

Iron content is expressed in parts per million (ppm). One part per million is a pound of mineral dissolved in a million pounds of water. The amount of iron that causes problems varies with each household situation. For most individuals, 0.3 ppm of iron is objectionable.

Treating Water to Remove Iron

The only sure way to avoid discoloration is to treat the water to remove the stain producing mineral. The treatment method to use depends on the degree of mineral concentration, the end use for that water, temperature variances of the water, and the treatment equipment technology available. Some equipment is more effective when combined with others, such as having the water go through a filter before reaching the water softener.

For information on different types of water treatment to remove iron, refer to FS 877IM Iron and Manganese Removal. Contact local water treatment equipment dealers for specific product information.

How Iron Affects Laundry

As groundwater that contains iron is exposed to air, such as when it is pumped into a washing machine, the dissolved, colorless mineral is oxidized to produce a reddish to brownish precipitate.

When fabric is exposed to water containing the colored precipitate, the result may be a general overall yellowing or patchy yellow-, brown-, or rust-colored stains or spots. It's easy to prevent laundry iron stains from rusty water present in household water lines. Simply check the water for discoloration before doing the laundry. Fill the washer before putting in the clothes. If the water is discolored, let the washer fill and run through the wash and rinse cycles to clear the water lines. It also may be necessary to flush toilets and open other faucets in the house to clear all discolored water from the pipes.

Laundry Products and Rust

Non-precipitating, packaged water softeners, such as Calgon or Rain Drops, can be used to tie up soluble iron in laundry water. Add these products to the wash water before the laundry to keep the rust from depositing on the garments. The conditioner must be used in both wash and rinse water according to package directions.

Substitute oxygen-type bleaches for chlorine bleaches. They do not react with dissolved iron to form stain-causing precipitates. Their bleaching action is milder, so stain removal ability is more limited. If they are used consistently, however, they are effective in maintaining overall whiteness of fabrics.

Chlorine-type bleaches will oxidize dissolved iron and produce colored precipitates. This is similar to the reaction of iron to oxygen in the air. Consequently, using chlorine bleach intensifies any staining problems.

Iron Stains on Clothes

If you notice rust or iron stains on clothes when taking them from the washer, don't dry them in the dryer before treating the stains. Heat sets the stains and makes them difficult or impossible to removal.

Try these steps to remove rust or iron stains:

- Rewash clothes immediately in clear water with a heavy duty detergent. Oxygen bleach or an enzyme presoak might also help. If your water is still discolored, use a coin-operated laundry.
- If stains persist, launder with a commercial rust remover (such as Iron Out or Whink). These products contain an acid which combines with the iron and changes it to a soluble, colorless form. **The products are poisonous, so use with care according to the manufacturers' directions.** Clothes must be rinsed thoroughly as any remaining acid deteriorates fabrics. Some commercial products are designed more for spot removal and should not be used in machines. Read and follow directions on package labels. Check for colorfastness if using on colored fabrics.
- Soak clothes for 10 to 15 minutes in a mixture of one ounce of oxalic acid crystals (available at most pharmacies) and one gallon of water. Use a plastic container. Rinse and launder. **Oxalic acid is a poison. Use safety precautions.**